

PATENT COOPERATION TREATY

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From the INTERNATIONAL SEARCHING AUTHORITY

PCT DUE DATE: 8-21-04
 BY: ASD

INVITATION TO PAY ADDITIONAL FEES

(PCT Article 17(3)(a) and Rule 40.1)

To:
 McDONNELL BOEHNEN HULBERT &
 BERGHOFF
 Attn. Carden, S. Richard
 300 South Wacker Drive
 Chicago, Illinois 60606
 UNITED STATES OF AMERICA

REGISTERED MAIL

Date of mailing (day/month/year)	07/07/2004
PAYMENT DUE	within 45 days /days from the above date of mailing
International application No. PCT/US2004/004072	International filing date (day/month/year) 12/02/2004
Applicant HOWE-BAKER ENGINEERS, LTD.	

1. This International Searching Authority

- (i) considers that there are 4 (number of) inventions claimed in the international application covered by the claims indicated ~~below~~ on the extra sheet:

and it considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated ~~below~~ on the extra sheet:

- (ii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:

1-3

- (iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid

2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:

EUR 1.550,00 x 3 = EUR 4.650,00
 Fee per additional invention number of additional inventions total amount of additional fees

Or, _____ x _____ = _____

The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



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Authorized officer

Sonia Kaufmann

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:
- 1-3
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.
3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.
4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 564 579 B1 (MCCARTNEY DANIEL G) 20 May 2003 (2003-05-20) figure 2	1-3
Y	US 4 689 063 A (CASTEL JOELLE ET AL) 25 August 1987 (1987-08-25) figures 1,2	1-3
A	US 2002/029585 A1 (WINNINGHAM HORACE G ET AL) 14 March 2002 (2002-03-14) paragraph '0012!; figure	1,2
A	US 3 405 530 A (DENAHAH RICHARD A ET AL) 15 October 1968 (1968-10-15) column 2, line 62 - line 64; figure	1,2
A	US 3 837 821 A (GRENIER M ET AL) 24 September 1974 (1974-09-24) column 3, line 46 - line 54; figure 1	3



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1,2,3

A process of recovering hydrocarbons heavier than CH₄ from LNG wherein the pressurized LNG feed is split with at least one portion used as an external reflux in a recovery tower without prior treatment, the tower bottoms is heated against the de-ethanizer overhead and fed to the de-ethanizer, the de-ethanizer overhead after cooling is fed as a second reflux to the tower and wherein the tower overhead is cold compressed and liquefied against the pressurized LNG feed.

2. Claims: 4,5,6

A process of recovering hydrocarbons heavier than CH₄ from LNG wherein the pressurized LNG after heating is fed to a recovery tower, the tower bottoms is heated against the de-ethanizer overhead and fed to the de-ethanizer, the de-ethanizer overhead after cooling is fed as a first reflux to the tower and wherein the tower overhead is cold compressed and liquefied against the pressurized LNG feed with at least one portion used as a second reflux in the recovery tower.

3. Claims: 7-10

A process of recovering hydrocarbons heavier than CH₄ from LNG wherein the pressurized LNG is fed to a recovery tower, the tower bottoms is heated against the de-ethanizer overhead and fed to the de-ethanizer, the de-ethanizer overhead after cooling is fed as a reflux to the tower and wherein the tower overhead is cold compressed and liquefied against the pressurized LNG feed.

4. Claims: 11-13

A process of recovering hydrocarbons heavier than CH₄ from LNG wherein the pressurized LNG feed is fed to a recovery tower, the tower bottoms is split into a first and second portion, the first portion is heated against the de-ethanizer overhead and fed to the de-ethanizer, the second portion is fed to the de-ethanizer as a reflux without heating, the de-ethanizer overhead after cooling is fed as a reflux to the tower and wherein the tower overhead is cold compressed and liquefied against the pressurized LNG feed.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The prior art for the different subject-matters of the application (i.e. features which are common to the subject-matter of all independent

claims) is to be seen in a process of recovering hydrocarbons heavier than CH₄ from LNG including the steps of

- pumping the LNG feed to a pressure of greater than 6,9 bar abs,
- directing at least a portion of the pressurized LNG to a cold box, heating said portion in a heat exchanger and directing it to a recovery tower producing a recovery tower overhead along with a recovery tower bottoms and
- removing the recovery tower overhead from the recovery tower, cold compressing it and cooling it against the at least a portion of the pressurized LNG to produce a reliquefied pressurized LNG.

Such a prior art is known from US-A-6 564 579 (see figure 2).

The only common concept linking together the independent claims 1, 4, 7 and 11 and being new with respect to the prior art US-A-6 564 579 is that the process scheme further including a de-ethanizer column and the steps of

- pressurizing the recovery tower bottoms, cross heat exchanging it with de-ethanizer overhead and directing it to the de-ethanizer,
- directing cross heat-exchanged de-ethanizer overhead as a reflux to the recovery tower and
- removing hydrocarbons heavier than CH₄ as de-ethanizer bottoms.

However, it would appear that this common concept being obvious with respect to the available state of the art and is therefore not considered as a same or corresponding special technical feature in the sense of Rule 13.2 PCT. Said concept is described in document US-A-4 689 063 (see figures 1 and 2) as providing the same advantages as in the present application i.e. providing high-yield recovery of hydrocarbons heavier than CH₄. The skilled person would therefore regard it as a normal design option to include the two-tower process and the features of said common concept in the process described in document US-A-6 564 579 in order to solve the problem posed.

Since there is no common nor corresponding special technical feature, a technical relationship as required by Rule 13.2 PCT is not present.

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define four different inventions not linked by a single general inventive concept. The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

The application relates to a plurality of inventions, or groups of inventions, in the sense of Rule 13.1 PCT. They have been divided as defined above. If the applicant pays additional fees for one (or more) not yet searched group(s) of invention(s), then the further search(es) may reveal further prior art that gives evidence of a further lack of unity 'a posteriori' within one (or more) of the not yet searched group(s). In such a case only the first invention in this (each of these) group(s) of inventions, which is considered to lack unity of invention, will be the subject of a search.

No further invitation to pay further additional fees will be issued. This is because Article 17(3)(a) PCT stipulates that the ISA shall establish the International Search Report on those parts of the

international application which relate to the invention first mentioned in the claims ('main invention') and for those parts which relate to inventions in respect of which the additional fees were paid. Neither the PCT nor the PCT guidelines provide a legal basis for further invitations to pay further additional search fees (W17/00, point 11 and W1/97, points 11-16).

Patent Family Annex

Information on patent family members

International Application No

PCT/US2004/004072

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6564579	B1	20-05-2003	WO	03095914 A1	20-11-2003
US 4689063	A	25-08-1987	FR	2578637 A1	12-09-1986
			DE	3660322 D1	21-07-1988
			EP	0197808 A1	15-10-1986
US 2002029585	A1	14-03-2002	AU	7501601 A	11-12-2001
			TW	555582 B	01-10-2003
			WO	0192778 A1	06-12-2001
US 3405530	A	15-10-1968	NONE		
US 3837821	A	24-09-1974	NONE		

Important Information for Applicants outside Europe

general

- the **claims cannot be changed** at this point in the procedure, the transmitted report is **not** the ISR (see Art. 19 PCT)
- non-payment does not lead to a **loss of rights**, a new procedure will be started on entry into the regional or national phase
- any payments have to be effected **directly** to this ISA (account details below), payments to other entities will not be accepted
- in case of a **total of more than 2 inventions** found: when paying please **specify exactly** which claims should be searched
- an **extension of the set time limit** cannot be granted, as the total number of days **must not exceed 45 days** (Rule 40.3 PCT)

payment by cheque or money transfer:

- the **date of payment** is considered to be the **date the money is booked** in the EPO account (details on extra sheet)
- faxed cheques are not considered to be a valid payment
- only payments in EUR are accepted, no equivalents in other currencies
- payments by **credit card** are **not possible**

payment by deposit account:

- the **date of payment** is considered to be the date that the **authorisation to deduct fees from the deposit account is received at the EPO**

***note:** if you don't have a deposit account with the EPO yourself you might want to consider using the account of an associate as a safe and quick way of paying*

payments under protest according to Rule 40 PCT:

- the protest will **not be accepted without a payment** of additional search fee(s)
- the protest has to be **accompanied by a technical reasoning**
- no **protest fee** needs to be paid yet, only additional **search fee(s)**

Account Details

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